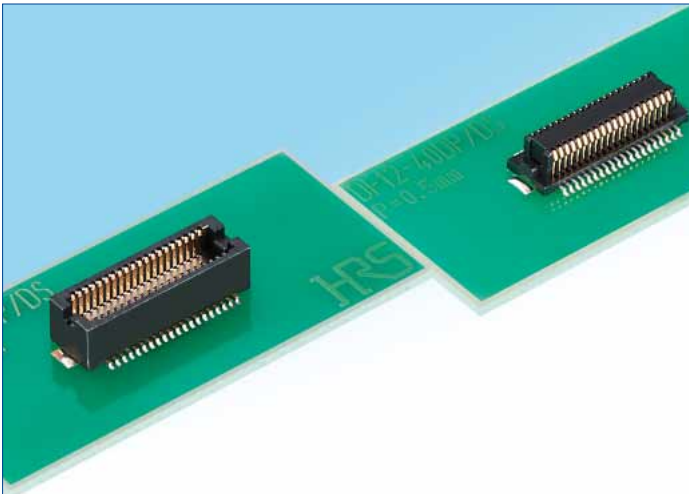


# 0.5mm Pitch SMT Board-to-Board Connectors

## DF12N Series



### Pick & Place Mounting

Vacuum Pick-up Area Available for Pick & Place Mounting Machines.

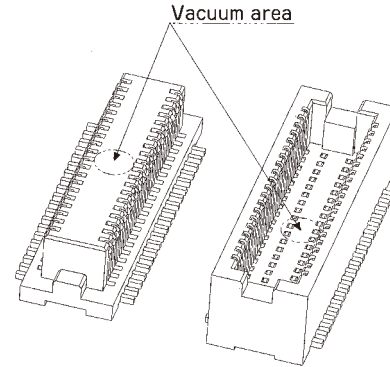
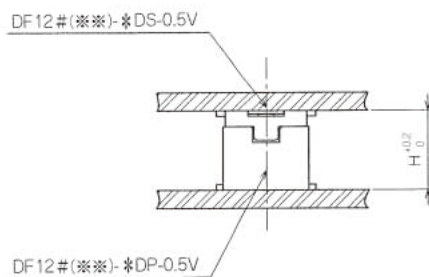


Fig.1

## ■Features

### 1. Wide Variety of Stacking Heights

Stacking heights of 3mm, 3.5mm 4mm and 5mm are provided in addition to the ultra-compact size of 0.5mm pitch.



| Header/Receptacle   | DF12#(3.0)-*DS-0.5V<br>Combination Stacking Height | DF12#-*DS-0.5V<br>Combination Stacking Height |
|---------------------|----------------------------------------------------|-----------------------------------------------|
| DF12#(3.0)-*DP-0.5V | 3.0                                                | —                                             |
| DF12#(3.5)-*DP-0.5V | —                                                  | 3.5                                           |
| DF12#(4.0)-*DP-0.5V | —                                                  | 4.0                                           |
| DF12#(5.0)-*DP-0.5V | —                                                  | 5.0                                           |

Note 1 : The (\*\*) after DF12# indicates the stacking height.

Note 2 : The stacking height does not include the soldering paste thickness.

### [Stacking Height Variations]

| Stacking Height |        | 3.0mm | 3.5mm | 4.0mm | 5.0mm |
|-----------------|--------|-------|-------|-------|-------|
| No. of Pos.     | 10pos. | ✓     | —     | —     | —     |
|                 | 14pos. | ✓     | —     | —     | —     |
|                 | 20pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 30pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 32pos. | ✓     | —     | ✓     | —     |
|                 | 36pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 40pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 50pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 60pos. | ✓     | ✓     | ✓     | ✓     |
|                 | 80pos. | ✓     | —     | —     | —     |

### 2. Pick & Place Mounting

The connector has the vacuum pick-up area to enable automatic mounting with the embossed tape packaging. (Fig.1)

### 3. Solder Tabs on the Soldering Portion

In consideration of mounting on FPC, solder tabs are provided on the product in order to prevent solder peeling.

### 4. 5Gbps Transmission Speed

# Product Specifications

|         |                      |                                              |                                                 |
|---------|----------------------|----------------------------------------------|-------------------------------------------------|
| Ratings | Rated Current 0.3A   | Operating Temperature -55 to +125°C (Note 1) | Storage Temperature Range -10 to +60°C (Note 2) |
|         | Rated Voltage 50V AC | Operating Humidity Range 40 to 80%           | Storage Humidity Range 40 to 70% (Note 2)       |

| Items                           | Specifications                                                   | Conditions                                                                                   |
|---------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1. Insulation Resistance        | 500MΩ min.                                                       | 100V DC                                                                                      |
| 2. Withstanding Voltage         | No flashover or insulation breakdown.                            | 150V AC per min.                                                                             |
| 3. Contact Resistance           | 50mΩ max.                                                        | 20mV AC or less 1kHz, 1mA.                                                                   |
| 4. Vibration                    | No electrical discontinuity of 1μs or more                       | Frequency : 10 to 55 Hz, single amplitude of 0.75mm, 2 hours in each of the 3 directions.    |
| 5. Humidity (Steady State)      | Contact resistance : 50mΩ max. Insulation resistance : 500MΩ min | 96 hours at temperature of 40±2°C and humidity of 90% to 95%                                 |
| 6. Temperature Cycle            | Contact resistance : 50mΩ max. Insulation resistance : 500MΩ min | (-65°C : 30 minutes 5 to 35°C : 3 minutes 125°C : 30 minutes 5 to 35°C : 3 minutes) 5 cycles |
| 7. Mating Durability            | Contact resistance : 50mΩ max.                                   | 50 cycles                                                                                    |
| 8. Resistance to Soldering Heat | No deformation of components affecting performance.              | SMT Type Reflow : At the recommended temperature profile                                     |
|                                 |                                                                  | Manual soldering : 350°C for 3 seconds                                                       |

Note 1 : Includes temperature rise due to current flow. (105°C in automotive vibration environment)

Note 2 : The term "storage" refers to products stored for long period of time prior to mounting and use. Operating Temperature Range and Humidity range covers non conducting condition of installed connectors in storage, shipment or during transportation.

# Materials / Finish

| Product           | Part       | Material        | Finish      | Remarks |
|-------------------|------------|-----------------|-------------|---------|
| Receptacle/Header | Insulator  | Polyamide       | Black       | UL94V-0 |
|                   | Contact    | Phosphor Copper | Gold Plated | —       |
|                   | Solder Tab | Brass           | Tin Plated  | —       |

# Product Number Structure

Refer to the chart below when determining the product specifications from the product number.

Please select from the product numbers listed in this catalog when placing orders.

## Receptacle

**DF12** **#** **(※※)** - **\*** **DS** - **0.5** **V** **(\*\*)**  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

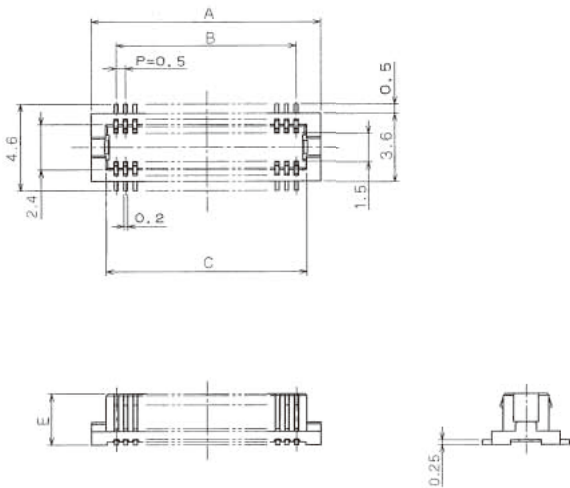
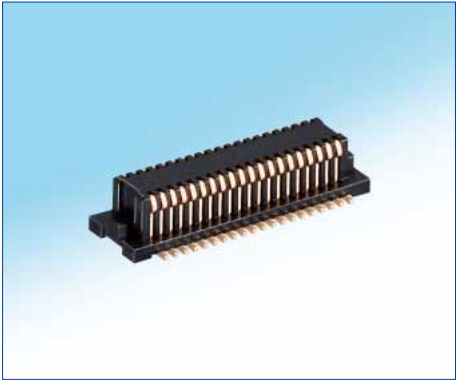
|                      |            |                                                           |  |                                                                       |  |
|----------------------|------------|-----------------------------------------------------------|--|-----------------------------------------------------------------------|--|
| ① Series Name : DF12 |            | ③ Stacking Height<br>3.0 : 3.0mm<br>Blank : 3.5 to 5.0mm  |  | ⑥ Contact Pitch : 0.5mm                                               |  |
| ② Type               |            |                                                           |  | ⑦ Contact Style<br>V : Straight SMT                                   |  |
|                      | Solder Tab |                                                           |  | ⑧ Packaging Type<br>(51) : Embossed Tape Packaging<br>(1,000pcs/reel) |  |
| NB                   | ✓          |                                                           |  |                                                                       |  |
| NC                   | ×          |                                                           |  |                                                                       |  |
|                      |            | ④ No. of Pos. : 10, 14, 20, 30, 32, 36, 40,<br>50, 60, 80 |  |                                                                       |  |
|                      |            | ⑤ Connector Type<br>DS : Double-row Receptacle            |  |                                                                       |  |

## Header

**DF12** **#** **(※※)** - **\*** **DP** - **0.5** **V** **(\*\*)**  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

|                                                                                                                  |                 |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
|------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------|------------|------------------------------------------------|---|----|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|-----------------|-----|-------|-----|-------|-----|-------|-----|-------|-------------------------|--|
| ① Series Name : DF12                                                                                             |                 | ③ Stacking Height                                      |            | ⑤ Connector Type                               |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| ② Type                                                                                                           |                 |                                                        |            | DP : Double-row Pin Header                     |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| <table><tr><td></td><td>Solder Tab</td></tr><tr><td>NB</td><td>✓</td></tr><tr><td>NC</td><td>×</td></tr></table> |                 |                                                        | Solder Tab | NB                                             | ✓ | NC | × | <table><tr><td>Indication</td><td>Stacking Height</td></tr><tr><td>3.0</td><td>3.0mm</td></tr><tr><td>3.5</td><td>3.5mm</td></tr><tr><td>4.0</td><td>4.0mm</td></tr><tr><td>5.0</td><td>5.0mm</td></tr></table> |  | Indication | Stacking Height | 3.0 | 3.0mm | 3.5 | 3.5mm | 4.0 | 4.0mm | 5.0 | 5.0mm | ⑥ Contact Pitch : 0.5mm |  |
|                                                                                                                  | Solder Tab      |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| NB                                                                                                               | ✓               |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| NC                                                                                                               | ×               |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| Indication                                                                                                       | Stacking Height |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| 3.0                                                                                                              | 3.0mm           |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| 3.5                                                                                                              | 3.5mm           |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| 4.0                                                                                                              | 4.0mm           |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
| 5.0                                                                                                              | 5.0mm           |                                                        |            |                                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
|                                                                                                                  |                 |                                                        |            | ⑦ Contact Style                                |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
|                                                                                                                  |                 |                                                        |            | V : Straight SMT                               |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
|                                                                                                                  |                 | ④ No. of Pos. : 10, 14, 20, 30, 32, 36, 40, 50, 60, 80 |            | ⑧ Packaging Type                               |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |
|                                                                                                                  |                 |                                                        |            | (51) : Embossed Tape Packaging (1,000pcs/reel) |   |    |   |                                                                                                                                                                                                                 |  |            |                 |     |       |     |       |     |       |     |       |                         |  |

■Receptacle Without Solder Tab



●Stacking Height : 3mm Product

Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | Remarks            | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|--------------------|------|
| DF12NC(3.0)-10DS-0.5V(51) | 537-0191-0 51 | 10          | 4.6  | 2.0  | 3.1  | 2.2 | Without Solder Tab | YES  |
| DF12NC(3.0)-14DS-0.5V(51) | 537-0192-0 51 | 14          | 5.6  | 3.0  | 4.1  |     |                    |      |
| DF12NC(3.0)-20DS-0.5V(51) | 537-0193-0 51 | 20          | 7.1  | 4.5  | 5.6  |     |                    |      |
| DF12NC(3.0)-30DS-0.5V(51) | 537-0194-0 51 | 30          | 9.6  | 7.0  | 8.1  |     |                    |      |
| DF12NC(3.0)-32DS-0.5V(51) | 537-0195-0 51 | 32          | 10.1 | 7.5  | 8.6  |     |                    |      |
| DF12NC(3.0)-36DS-0.5V(51) | 537-0196-0 51 | 36          | 11.1 | 8.5  | 9.6  |     |                    |      |
| DF12NC(3.0)-40DS-0.5V(51) | 537-0197-0 51 | 40          | 12.1 | 9.5  | 10.6 |     |                    |      |
| DF12NC(3.0)-50DS-0.5V(51) | 537-0198-0 51 | 50          | 14.6 | 12.0 | 13.1 |     |                    |      |
| DF12NC(3.0)-60DS-0.5V(51) | 537-0199-0 51 | 60          | 17.1 | 14.5 | 15.6 |     |                    |      |
| DF12NC(3.0)-80DS-0.5V(51) | 537-0285-0 51 | 80          | 22.1 | 19.5 | 20.6 |     |                    |      |

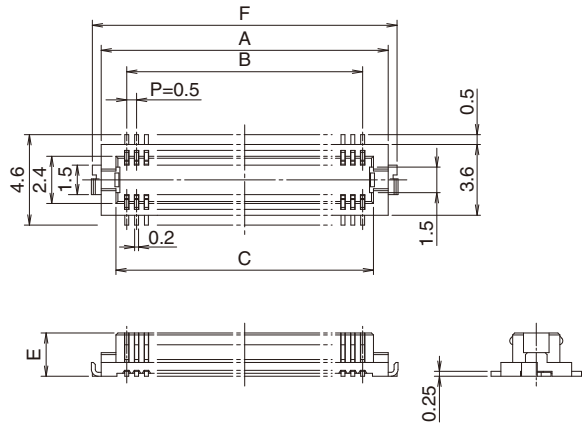
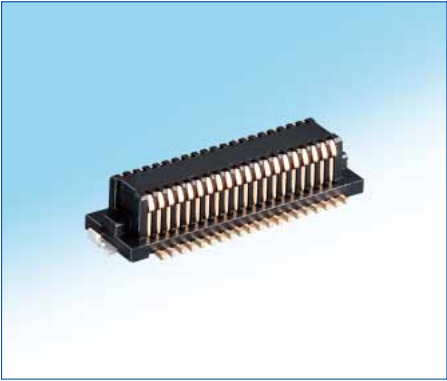
●Stacking Height : 3.5 to 5mm Product

Unit : mm

| Part No.             | HRS No.       | No. of Pos. | A    | B    | C    | E   | Remarks            | RoHS |
|----------------------|---------------|-------------|------|------|------|-----|--------------------|------|
| DF12NC-20DS-0.5V(51) | 537-0292-0 51 | 20          | 7.1  | 4.5  | 5.6  | 2.7 | Without Solder Tab | YES  |
| DF12NC-30DS-0.5V(51) | 537-0293-0 51 | 30          | 9.6  | 7.0  | 8.1  |     |                    |      |
| DF12NC-32DS-0.5V(51) | 537-0294-0 51 | 32          | 10.1 | 7.5  | 8.6  |     |                    |      |
| DF12NC-36DS-0.5V(51) | 537-0295-0 51 | 36          | 11.1 | 8.5  | 9.6  |     |                    |      |
| DF12NC-40DS-0.5V(51) | 537-0296-0 51 | 40          | 12.1 | 9.5  | 10.6 |     |                    |      |
| DF12NC-50DS-0.5V(51) | 537-0297-0 51 | 50          | 14.6 | 12.0 | 13.1 |     |                    |      |
| DF12NC-60DS-0.5V(51) | 537-0298-0 51 | 60          | 17.1 | 14.5 | 15.6 |     |                    |      |

Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

■Receptacle With Solder Tab



●Stacking Height : 3mm Product

Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | F    | Remarks         | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|------|-----------------|------|
| DF12NB(3.0)-10DS-0.5V(51) | 537-0097-0 51 | 10          | 4.6  | 2.0  | 3.1  | 2.2 | 5.6  | With Solder Tab | YES  |
| DF12NB(3.0)-14DS-0.5V(51) | 537-0098-0 51 | 14          | 5.6  | 3.0  | 4.1  |     | 6.6  |                 |      |
| DF12NB(3.0)-20DS-0.5V(51) | 537-0099-0 51 | 20          | 7.1  | 4.5  | 5.6  |     | 8.1  |                 |      |
| DF12NB(3.0)-30DS-0.5V(51) | 537-0185-0 51 | 30          | 9.6  | 7.0  | 8.1  |     | 10.6 |                 |      |
| DF12NB(3.0)-32DS-0.5V(51) | 537-0186-0 51 | 32          | 10.1 | 7.5  | 8.6  |     | 11.1 |                 |      |
| DF12NB(3.0)-36DS-0.5V(51) | 537-0187-0 51 | 36          | 11.1 | 8.5  | 9.6  |     | 12.1 |                 |      |
| DF12NB(3.0)-40DS-0.5V(51) | 537-0188-0 51 | 40          | 12.1 | 9.5  | 10.6 |     | 13.1 |                 |      |
| DF12NB(3.0)-50DS-0.5V(51) | 537-0189-0 51 | 50          | 14.6 | 12.0 | 13.1 |     | 15.6 |                 |      |
| DF12NB(3.0)-60DS-0.5V(51) | 537-0190-0 51 | 60          | 17.1 | 14.5 | 15.6 |     | 18.1 |                 |      |
| DF12NB(3.0)-80DS-0.5V(51) | 537-0095-0 51 | 80          | 22.1 | 19.5 | 20.6 |     | 23.1 |                 |      |

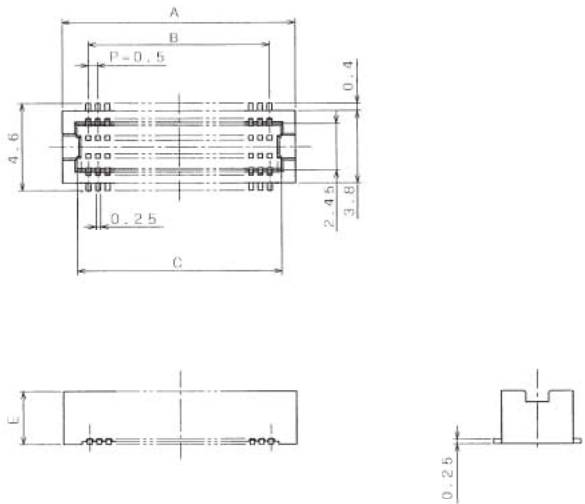
●Stacking Height : 3.5 to 5mm Product

Unit : mm

| Part No.             | HRS No.       | No. of Pos. | A    | B    | C    | E   | F    | Remarks         | RoHS |
|----------------------|---------------|-------------|------|------|------|-----|------|-----------------|------|
| DF12NB-20DS-0.5V(51) | 537-0286-0 51 | 20          | 7.1  | 4.5  | 5.6  | 2.7 | 8.1  | With Solder Tab | YES  |
| DF12NB-30DS-0.5V(51) | 537-0287-0 51 | 30          | 9.6  | 7.0  | 8.1  |     | 10.6 |                 |      |
| DF12NB-32DS-0.5V(51) | 537-0288-0 51 | 32          | 10.1 | 7.5  | 8.6  |     | 11.1 |                 |      |
| DF12NB-36DS-0.5V(51) | 537-0289-0 51 | 36          | 11.1 | 8.5  | 9.6  |     | 12.1 |                 |      |
| DF12NB-40DS-0.5V(51) | 537-0290-0 51 | 40          | 12.1 | 9.5  | 10.6 |     | 13.1 |                 |      |
| DF12NB-50DS-0.5V(51) | 537-0291-0 51 | 50          | 14.6 | 12.0 | 13.1 |     | 15.6 |                 |      |
| DF12NB-60DS-0.5V(51) | 537-0096-0 51 | 60          | 17.1 | 14.5 | 15.6 |     | 18.1 |                 |      |

Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

Header Without Solder Tab



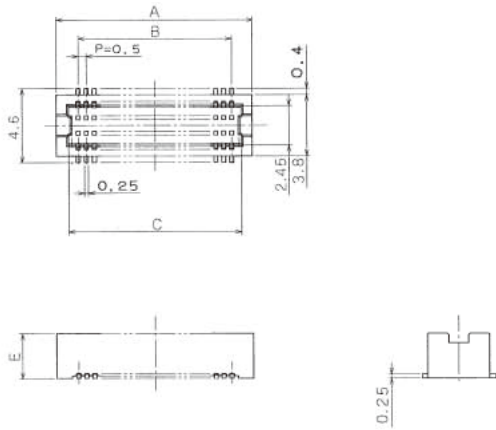
●Stacking Height : 3mm Product

Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | Remarks            | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|--------------------|------|
| DF12NC(3.0)-10DP-0.5V(51) | 537-0396-0 51 | 10          | 4.7  | 2.0  | 3.2  | 2.3 | Without Solder Tab | YES  |
| DF12NC(3.0)-14DP-0.5V(51) | 537-0397-0 51 | 14          | 5.7  | 3.0  | 4.2  |     |                    |      |
| DF12NC(3.0)-20DP-0.5V(51) | 537-0398-0 51 | 20          | 7.2  | 4.5  | 5.7  |     |                    |      |
| DF12NC(3.0)-30DP-0.5V(51) | 537-0399-0 51 | 30          | 9.7  | 7.0  | 8.2  |     |                    |      |
| DF12NC(3.0)-32DP-0.5V(51) | 537-0487-0 51 | 32          | 10.2 | 7.5  | 8.7  |     |                    |      |
| DF12NC(3.0)-36DP-0.5V(51) | 537-0488-0 51 | 36          | 11.2 | 8.5  | 9.7  |     |                    |      |
| DF12NC(3.0)-40DP-0.5V(51) | 537-0489-0 51 | 40          | 12.2 | 9.5  | 10.7 |     |                    |      |
| DF12NC(3.0)-50DP-0.5V(51) | 537-0490-0 51 | 50          | 14.7 | 12.0 | 13.2 |     |                    |      |
| DF12NC(3.0)-60DP-0.5V(51) | 537-0491-0 51 | 60          | 17.2 | 14.5 | 15.7 |     |                    |      |
| DF12NC(3.0)-80DP-0.5V(51) | 537-0492-0 51 | 80          | 22.2 | 19.5 | 20.7 |     |                    |      |

Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

■Header Without Solder Tab



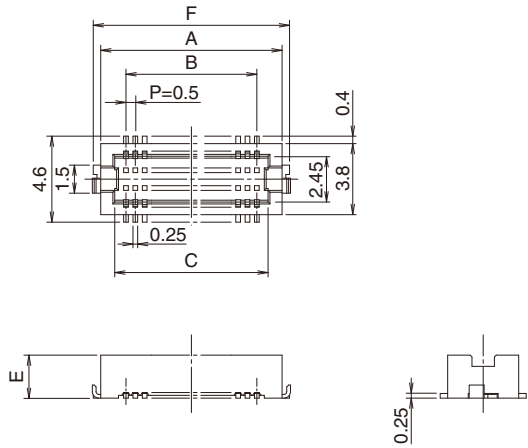
●Stacking Height : 3.5 to 5mm Product

Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | Remarks               | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|-----------------------|------|
| DF12NC(3.5)-20DP-0.5V(51) | 537-0499-0 51 | 20          | 7.2  | 4.5  | 5.7  | 2.8 | Without<br>Solder Tab | YES  |
| DF12NC(3.5)-30DP-0.5V(51) | 537-0587-0 51 | 30          | 9.7  | 7.0  | 8.2  |     |                       |      |
| DF12NC(3.5)-36DP-0.5V(51) | 537-0588-0 51 | 36          | 11.2 | 8.5  | 9.7  |     |                       |      |
| DF12NC(3.5)-40DP-0.5V(51) | 537-0589-0 51 | 40          | 12.2 | 9.5  | 10.7 |     |                       |      |
| DF12NC(3.5)-50DP-0.5V(51) | 537-0590-0 51 | 50          | 14.7 | 12.0 | 13.2 |     |                       |      |
| DF12NC(3.5)-60DP-0.5V(51) | 537-0591-0 51 | 60          | 17.2 | 14.5 | 15.7 |     |                       |      |
| DF12NC(4.0)-20DP-0.5V(51) | 537-0599-0 51 | 20          | 7.2  | 4.5  | 5.7  | 3.3 |                       |      |
| DF12NC(4.0)-30DP-0.5V(51) | 537-0699-0 51 | 30          | 9.7  | 7.0  | 8.2  |     |                       |      |
| DF12NC(4.0)-32DP-0.5V(51) | 537-0872-0 51 | 32          | 10.2 | 7.5  | 8.7  |     |                       |      |
| DF12NC(4.0)-36DP-0.5V(51) | 537-0873-0 51 | 36          | 11.2 | 8.5  | 9.7  |     |                       |      |
| DF12NC(4.0)-40DP-0.5V(51) | 537-0874-0 51 | 40          | 12.2 | 9.5  | 10.7 |     |                       |      |
| DF12NC(4.0)-50DP-0.5V(51) | 537-0875-0 51 | 50          | 14.7 | 12.0 | 13.2 |     |                       |      |
| DF12NC(4.0)-60DP-0.5V(51) | 537-0876-0 51 | 60          | 17.2 | 14.5 | 15.7 | 4.3 |                       |      |
| DF12NC(5.0)-20DP-0.5V(51) | 537-0883-0 51 | 20          | 7.2  | 4.5  | 5.7  |     |                       |      |
| DF12NC(5.0)-30DP-0.5V(51) | 537-0884-0 51 | 30          | 9.7  | 7.0  | 8.2  |     |                       |      |
| DF12NC(5.0)-36DP-0.5V(51) | 537-0885-0 51 | 36          | 11.2 | 8.5  | 9.7  |     |                       |      |
| DF12NC(5.0)-40DP-0.5V(51) | 537-0886-0 51 | 40          | 12.2 | 9.5  | 10.7 |     |                       |      |
| DF12NC(5.0)-50DP-0.5V(51) | 537-0887-0 51 | 50          | 14.7 | 12.0 | 13.2 |     |                       |      |
| DF12NC(5.0)-60DP-0.5V(51) | 537-0888-0 51 | 60          | 17.2 | 14.5 | 15.7 |     |                       |      |

Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

Header With Solder Tab



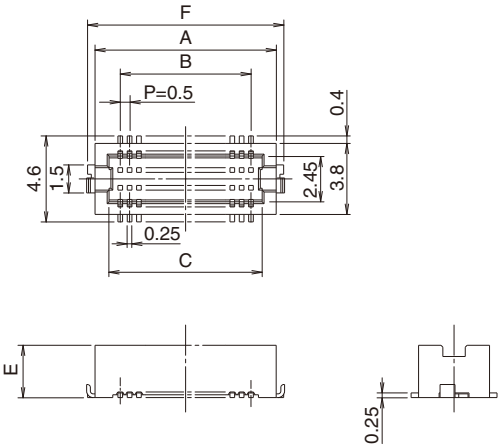
●Stacking Height : 3mm Product

Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | F    | Remarks         | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|------|-----------------|------|
| DF12NB(3.0)-10DP-0.5V(51) | 537-0299-0 51 | 10          | 4.7  | 2.0  | 3.2  | 2.3 | 5.6  | With Solder Tab | YES  |
| DF12NB(3.0)-14DP-0.5V(51) | 537-0387-0 51 | 14          | 5.7  | 3.0  | 4.2  |     | 6.6  |                 |      |
| DF12NB(3.0)-20DP-0.5V(51) | 537-0388-0 51 | 20          | 7.2  | 4.5  | 5.7  |     | 8.1  |                 |      |
| DF12NB(3.0)-30DP-0.5V(51) | 537-0389-0 51 | 30          | 9.7  | 7.0  | 8.2  |     | 10.6 |                 |      |
| DF12NB(3.0)-32DP-0.5V(51) | 537-0390-0 51 | 32          | 10.2 | 7.5  | 8.7  |     | 11.1 |                 |      |
| DF12NB(3.0)-36DP-0.5V(51) | 537-0391-0 51 | 36          | 11.2 | 8.5  | 9.7  |     | 12.1 |                 |      |
| DF12NB(3.0)-40DP-0.5V(51) | 537-0392-0 51 | 40          | 12.2 | 9.5  | 10.7 |     | 13.1 |                 |      |
| DF12NB(3.0)-50DP-0.5V(51) | 537-0393-0 51 | 50          | 14.7 | 12.0 | 13.2 |     | 15.6 |                 |      |
| DF12NB(3.0)-60DP-0.5V(51) | 537-0394-0 51 | 60          | 17.2 | 14.5 | 15.7 |     | 18.1 |                 |      |
| DF12NB(3.0)-80DP-0.5V(51) | 537-0395-0 51 | 80          | 22.2 | 19.5 | 20.7 |     | 23.1 |                 |      |

Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

Header With Solder Tab



●Stacking Height : 3.5 to 5mm Product

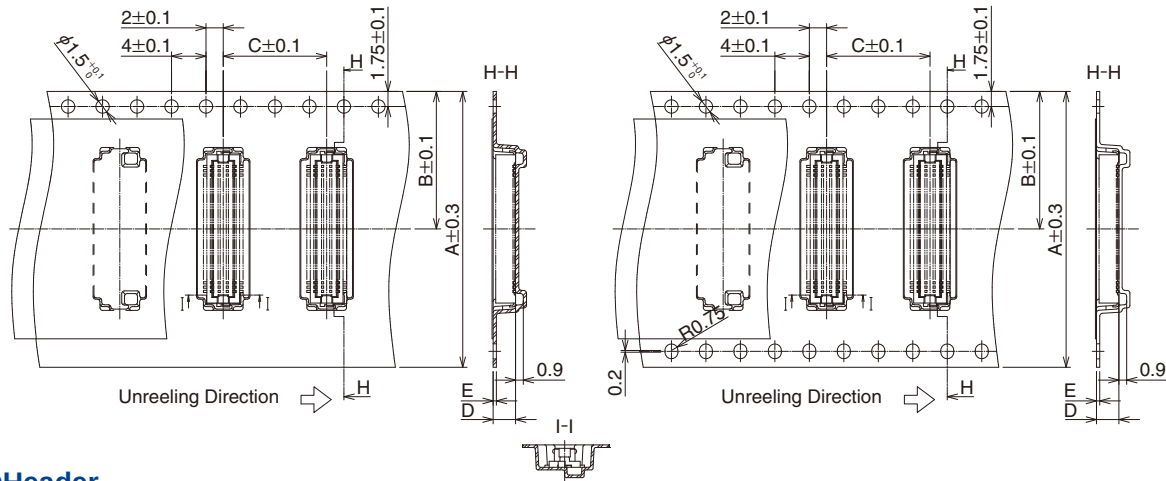
Unit : mm

| Part No.                  | HRS No.       | No. of Pos. | A    | B    | C    | E   | F    | Remarks         | RoHS |
|---------------------------|---------------|-------------|------|------|------|-----|------|-----------------|------|
| DF12NB(3.5)-20DP-0.5V(51) | 537-0493-0 51 | 20          | 7.2  | 4.5  | 5.7  | 2.8 | 8.1  | With Solder Tab | YES  |
| DF12NB(3.5)-30DP-0.5V(51) | 537-0494-0 51 | 30          | 9.7  | 7.0  | 8.2  |     | 10.6 |                 |      |
| DF12NB(3.5)-36DP-0.5V(51) | 537-0495-0 51 | 36          | 11.2 | 8.5  | 9.7  |     | 12.1 |                 |      |
| DF12NB(3.5)-40DP-0.5V(51) | 537-0496-0 51 | 40          | 12.2 | 9.5  | 10.7 |     | 13.1 |                 |      |
| DF12NB(3.5)-50DP-0.5V(51) | 537-0497-0 51 | 50          | 14.7 | 12.0 | 13.2 |     | 15.6 |                 |      |
| DF12NB(3.5)-60DP-0.5V(51) | 537-0498-0 51 | 60          | 17.2 | 14.5 | 15.7 |     | 18.1 |                 |      |
| DF12NB(4.0)-20DP-0.5V(51) | 537-0592-0 51 | 20          | 7.2  | 4.5  | 5.7  | 3.3 | 8.1  |                 |      |
| DF12NB(4.0)-30DP-0.5V(51) | 537-0593-0 51 | 30          | 9.7  | 7.0  | 8.2  |     | 10.6 |                 |      |
| DF12NB(4.0)-32DP-0.5V(51) | 537-0594-0 51 | 32          | 10.2 | 7.5  | 8.7  |     | 11.1 |                 |      |
| DF12NB(4.0)-36DP-0.5V(51) | 537-0595-0 51 | 36          | 11.2 | 8.5  | 9.7  |     | 12.1 |                 |      |
| DF12NB(4.0)-40DP-0.5V(51) | 537-0596-0 51 | 40          | 12.2 | 9.5  | 10.7 |     | 13.1 |                 |      |
| DF12NB(4.0)-50DP-0.5V(51) | 537-0597-0 51 | 50          | 14.7 | 12.0 | 13.2 |     | 15.6 |                 |      |
| DF12NB(4.0)-60DP-0.5V(51) | 537-0598-0 51 | 60          | 17.2 | 14.5 | 15.7 |     | 18.1 |                 |      |
| DF12NB(5.0)-20DP-0.5V(51) | 537-0877-0 51 | 20          | 7.2  | 4.5  | 5.7  | 4.3 | 8.1  |                 |      |
| DF12NB(5.0)-30DP-0.5V(51) | 537-0878-0 51 | 30          | 9.7  | 7.0  | 8.2  |     | 10.6 |                 |      |
| DF12NB(5.0)-36DP-0.5V(51) | 537-0879-0 51 | 36          | 11.2 | 8.5  | 9.7  |     | 12.1 |                 |      |
| DF12NB(5.0)-40DP-0.5V(51) | 537-0880-0 51 | 40          | 12.2 | 9.5  | 10.7 |     | 13.1 |                 |      |
| DF12NB(5.0)-50DP-0.5V(51) | 537-0881-0 51 | 50          | 14.7 | 12.0 | 13.2 |     | 15.6 |                 |      |
| DF12NB(5.0)-60DP-0.5V(51) | 537-0882-0 51 | 60          | 17.2 | 14.5 | 15.7 |     | 18.1 |                 |      |

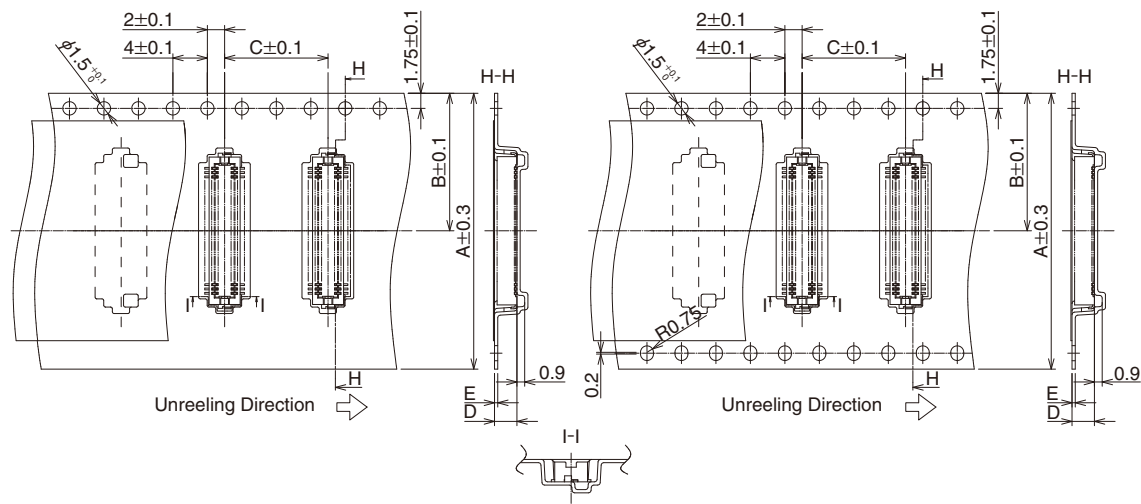
Note : Please order the embossed tape packaging product per reel. (1,000pcs/reel)

◆Embossed Carrier Tape Dimensions

●Receptacle

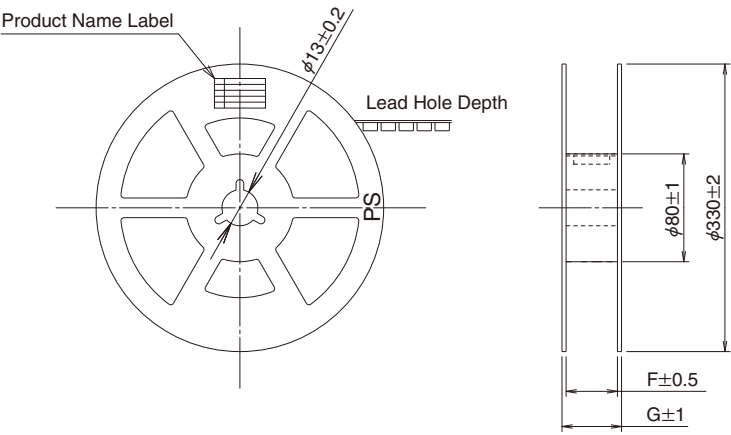


●Header



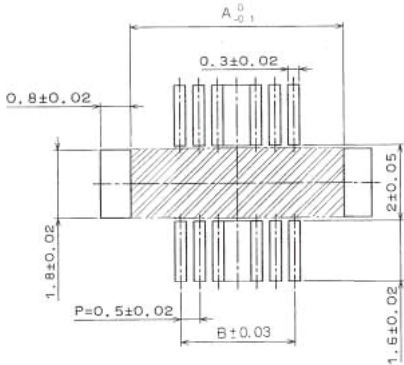
| Connector            | A                    | B    | C  | D    | E    | F    | G    | Connector            | A                    | B    | C    | D    | E    | F    | G    |      |      |      |      |      |      |      |
|----------------------|----------------------|------|----|------|------|------|------|----------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| DF12#(3.0)-10DS-0.5V | 16                   | 7.5  | 12 | 2.6  | 0.30 | 17.5 | 21.5 | DF12#(3.5)-20DP-0.5V | 16                   | 7.5  | 12   | 3.1  | 0.38 | 17.5 | 21.5 |      |      |      |      |      |      |      |
| DF12#(3.0)-14DS-0.5V |                      |      |    |      | 24   |      |      | 11.5                 | DF12#(3.5)-30DP-0.5V | 8    |      |      |      |      |      | 0.30 |      |      |      |      |      |      |
| DF12#(3.0)-20DS-0.5V |                      |      |    |      |      |      |      |                      | DF12#(3.5)-36DP-0.5V |      |      |      |      |      |      | 12   | 0.38 |      |      |      |      |      |
| DF12#(3.0)-30DS-0.5V | DF12#(3.5)-40DP-0.5V | 8    |    |      |      | 0.30 |      |                      |                      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-32DS-0.5V | DF12#(3.5)-50DP-0.5V |      |    |      | 32   | 14.2 | 12   | 0.38                 | 33.5                 | 37.5 |      |      |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-36DS-0.5V | DF12#(4.0)-20DP-0.5V |      |    |      |      | 16   |      |                      |                      |      | 7.5  |      |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-40DS-0.5V | DF12#(4.0)-30DP-0.5V | 24   |    |      |      | 11.5 |      |                      |                      |      | 8    | 0.30 | 25.5 | 29.5 |      |      |      |      |      |      |      |      |
| DF12#(3.0)-50DS-0.5V | DF12#(4.0)-32DP-0.5V |      |    |      | 12   |      | 0.38 | 0.30                 |                      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-60DS-0.5V | DF12#(4.0)-40DP-0.5V |      |    |      |      |      |      |                      | 32                   | 14.2 |      |      |      |      | 4.6  | 0.38 | 33.5 | 37.5 |      |      |      |      |
| DF12#(3.0)-80DS-0.5V | DF12#(4.0)-50DP-0.5V | 24   |    |      |      | 11.5 |      |                      |                      |      | 8    | 0.30 | 25.5 | 29.5 |      |      |      |      |      |      |      |      |
| DF12#(3.0)-10DP-0.5V | DF12#(4.0)-60DP-0.5V |      |    |      | 32   |      | 14.2 | 12                   |                      |      |      |      |      |      |      |      |      |      | 0.38 | 33.5 | 37.5 |      |
| DF12#(3.0)-14DP-0.5V | DF12#(5.0)-20DP-0.5V |      |    |      |      |      |      |                      | 16                   | 7.5  |      |      |      |      | 12   | 0.38 | 25.5 | 29.5 |      |      |      |      |
| DF12#(3.0)-20DP-0.5V | DF12#(5.0)-30DP-0.5V | 24   |    |      |      | 11.5 |      |                      | 8                    | 0.30 | 33.5 | 37.5 |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-30DP-0.5V | DF12#(5.0)-36DP-0.5V |      |    |      | 32   |      | 14.2 | 12                   |                      |      |      |      | 0.38 | 33.5 |      |      |      |      | 37.5 |      |      |      |
| DF12#(3.0)-32DP-0.5V | DF12#(5.0)-40DP-0.5V |      |    |      |      |      |      |                      |                      |      |      |      |      |      | 32   | 14.2 | 12   | 0.38 |      | 33.5 | 37.5 |      |
| DF12#(3.0)-36DP-0.5V | DF12#(5.0)-50DP-0.5V | 32   |    |      |      | 14.2 |      |                      | 12                   | 0.38 | 33.5 | 37.5 |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-40DP-0.5V | DF12#(5.0)-60DP-0.5V |      |    |      | 32   |      | 14.2 | 12                   |                      |      |      |      | 0.38 | 33.5 |      |      |      |      | 37.5 |      |      |      |
| DF12#(3.0)-50DP-0.5V |                      |      |    |      |      |      |      |                      |                      |      |      |      |      |      | 32   | 14.2 | 12   | 0.38 |      | 33.5 | 37.5 |      |
| DF12#(3.0)-60DP-0.5V |                      | 32   |    |      |      | 14.2 |      |                      | 12                   | 0.38 | 33.5 | 37.5 |      |      |      |      |      |      |      |      |      |      |
| DF12#(3.0)-80DP-0.5V |                      |      | 32 | 14.2 | 12   |      | 0.38 | 33.5                 |                      |      |      |      | 37.5 |      |      |      |      |      |      |      |      |      |
| DF12#-20DS-0.5V      | 16                   |      |    |      |      |      |      |                      |                      |      |      |      |      | 7.5  | 8    | 3.1  | 0.30 | 25.5 | 29.5 |      |      |      |
| DF12#-30DS-0.5V      | 24                   | 11.5 |    |      |      | 0.38 |      |                      | 33.5                 | 37.5 |      |      |      |      |      |      |      |      |      |      |      |      |
| DF12#-32DS-0.5V      |                      |      | 12 | 0.30 | 25.5 |      | 29.5 |                      |                      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| DF12#-36DS-0.5V      |                      |      |    |      |      |      |      | 8                    |                      |      | 0.38 | 33.5 | 37.5 |      |      |      |      |      |      |      |      |      |
| DF12#-40DS-0.5V      |                      |      |    |      |      |      |      |                      |                      |      |      |      |      | 0.38 |      |      |      |      |      | 33.5 | 37.5 |      |
| DF12#-50DS-0.5V      |                      |      |    |      |      |      |      |                      |                      |      |      |      |      |      |      |      |      |      |      |      |      | 0.30 |
| DF12#-60DS-0.5V      | 0.38                 | 33.5 |    |      |      |      |      |                      |                      |      |      |      |      |      |      |      |      |      |      |      |      |      |

●Reel Dimensions

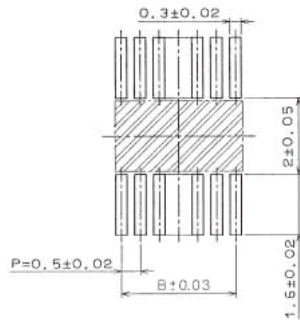


◆Recommended PCB mounting pattern

■DF12N with Solder Tab



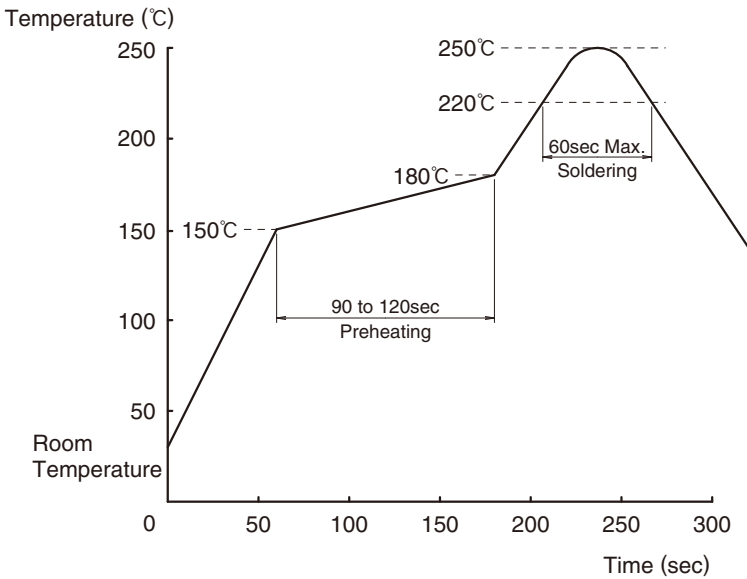
■DF12N without Solder Tab



Note 1 : Refer to 3 to 8 for dimensions A and B.

Note 2 :  If there is a pattern on the shaded area and no resist is applied, it may come into contact with the connector contact.

## ◆Precautions for Use

|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.Recommended Temperature Profile (SMT)                                |  <p>Note 1 : Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle.</p> <p>Note 2 : The temperature profile indicates the temperature of the surface of the connector lead.</p>                                                                                                                                                                                                                                                                                                                                                                             |
| 2.Recommended Manual Soldering Condition (SMT)                         | Soldering iron temperature : 350°C, Soldering time : Within 3 seconds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3.Recommended Screen Thickness and Open Area Ratio(Pattern Area Ratio) | 0.12mm<br>Open area ratio : 70%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 4.Board Warp(SMT)                                                      | Maximum 0.02mm in the connector center area, based on both connector edges                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5.Cleaning Condition                                                   | Refer to "Nylon Connector Use Handbook".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6.Cautions                                                             | <ul style="list-style-type: none"> <li>■ The receptacle is designed with the contacts exposed. Touching the contacts with bare hands may cause contact failure or damage to the device due to static electricity.</li> <li>■ Insertion/extraction when not mounted to the board may result in damage or contact deformation.</li> <li>■ Avoid securing the board only with the connector. Please use other methods to secure the board.</li> <li>■ Excessive prying during insertion and extraction may result in damage.</li> <li>■ Do not apply flux that will result in flux rise during manual soldering.</li> <li>■ The color of the mold may differ slightly depending on the production lot however this does not affect the performance.</li> </ul> |

# HIROSE ELECTRIC CO.,LTD.

2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN  
<https://www.hirose.com/>